Abstracts of Selected Papers

"The Purchase of Development Rights Program: Historical Summary and Motivation for Landowner Participation." Billy V. Lessley and David Pitt (Maryland)
The state purchase of development rights in Maryland operates through the Maryland Agricultural Land Preservation Foundation. Since 1980, there have been 841 agricultural districts formed in Maryland. These districts (where agriculture is the preferred use) encompass 124,172 acres. Carrol County continues to lead the state in district formation and acres included in the district (approximately 20 percent of the acres in all districts). In total, 316 easement applications have been accepted and purchased out of 608 offered for 48,725 acres. Average asking price has declined from $1,483 per acre in 1980 to $936 in 1986. Actual acquisition costs per acre ranged from $953 in 1980 to $755 in 1986. Total acquisition costs since 1980 have amounted to $39.8 million.

A survey of 104 farmers was conducted to study similarities and differences in farmers who do and do not participate in the land preservation program. Survey information was used to estimate predictive models about program participation, to study relationships of farmers to population change and development and to study differences in communication channels used to assist farmers in making a successful bid to sell an easement to the Maryland Land Preservation Foundation.

"Potential Water Use Conflicts Generated by Irrigated Agriculture in Southern New England." Arthur Gold, Thomas Weaver, Edwin Porter, and James Opaluch (Rhode Island)
This study constructs a simulation model to evaluate the potential for conflict among residential and agricultural users of water in southern Rhode Island. The model estimates the profitability of irrigation of turf farms and projects the economic value and total use of irrigation water. The results indicate that the economic value of irrigation water compares favorably with current residential water prices in the area. In addition, substantial demand for irrigation water is projected. Given current rates of growth in turf acreage and residential water use, there appears to be a significant potential for conflict, particularly given the absence of institutions for allocating water among users.

"A Simultaneous Intersectoral Model: An Application to the Northeast Food Industry." Peter J. Wobus, Conrado M. Gempesaw II (University of Delaware) and Gary C. Reisner (OMB)
Previous studies analyzing the U.S food industry have used national data and/or have focused on a particular sector of the industry. However, regional differences in resource endowments, income opportunities, and population distribution imply that the impact of changing economic environment will not be the same for all regions. A farm to retail multiproduct sectoral model for the Northeast food industry is developed and estimated This regional approach is used to analyze the effects of changes in exogenous variables on the Northeast region's food production and consumption. Empirical results are presented in terms of intrasectoral flexibilities and elasticities. Selected results from other regions are also presented and compared with the Northeast results.

"The Impact of Policy Changes in the 1980s on Major Dairy Production Regions Regions in the U.S. with Focus on the Northeast." A. Birgit Huy, Joachim G. Elterich, Conrado M. Gempesaw II (University of Delaware)
Gauging the impact of recent policy changes, this article analyzes production characteristics and the impact of the dairy assessment for Northeastern dairy farmers as compared to other major production regions. Employing a restricted translog variable profit function, returns to size, shadow prices, supply elasticities for milk and livestock as well as demand elasticities for concentrate were estimated. Northeastern, just as Midwestern farmers, were less responsive in milk supply and concentrate demand, more responsive in livestock production, and less efficient than their California and Texas counterparts. The dairy assessment affected their profits comparatively later after two years. Negative shadow prices indicated overinvestment into fixed factors.

"An Application of the Capital Asset Pricing Model to Delaware Agriculture." Alfred M. Tambe, Conrado M. Gempesaw II, and U. Carl Toensmeyer (University of Delaware)
The capital assets pricing model is applied to Delaware's farm sector portfolio of eighteen products. Beta-risk coefficients are estimated for production and marketing risks. The impact of off-farm income on systematic and unsystematic risks is also evaluated. The combined weighted least squares-Cochrane Orcutt method is proposed and used as the estimating procedure. The results reveal minor differences between production and marketing beta coefficients. The effects of off-farm income, however, on some major crops were significant.

"A Comparison of Estimated Impacts from Five Regional Input-Output Models." Sharon M. Brucker, Steven E. Hastings and William R. Latham (University of Delaware)
Input-output analysis is an important and frequently used tool in regional economic impact studies. Therefore, there has been widespread interest by local planners and/or rural development researchers in learning how to build or acquire a model customized for their specific region. Five different non-survey based regional input-output

models were compared. Despite differences in methodology, the five models tended to provide output and income inpact estimates which were very similar. However, when estimating employment impacts, the models came up with different results. They also generated a very wide range of estimates for the impacts on disaggregated sectors. The similar results from the models implies that the models users can choose the model which provides the best interface with their needs and be confident that the estimated impacts will be consistent with other existing models. Such confidence should lead to less duplication and more efficiency of effort in building regional models.

"Managing Risk and Uncertainty in Agricultural Nonpoint Source Contamination of Ground Water: Sources and—Solutions (?)." John M. Haistead and Minkang Zhu (Department of Agricultural Economics Virginia Polytechnic Institute and State University)

Ground water contamination from agricultural chemicals has been reported in more than 30 states. These pesticides and nitrates are known or suspected to cause a variety of adverse health effects. Managing this problem is especially difficult due to the nonpoint nature of their source and the uncertainty and risk inherent in modeling and measurement methods. This paper presents an overview of the ground water contamination problem, and discusses three major sources of uncertainty in ground water management: medical, physical, and economic. The paper concludes by discussing possible approaches to the ground water management program which attempt to incorporate this risk and uncertainty into an interdependent framework.

"An Economic Analysis of Orchard Rejuvenation in Response to the Reduction or the Elimination of the Use of Alar™." Martha A. Ktmball and Wesley R. Autio (University of Massachusetts)

Since 1966, Alar™ was used to extend the harvest season for apples enabling growers to manage harvest labor efficiently. Without Alar, the quantity of fruit harvested per day must increase, thus raising production costs, increasing fruit drop and loss, and decreasing revenues. Multiperiod linear programming was used to examine the economics of rejuvenating orchard acreage with a mixture of strains and rootstocks that retain commercially profitable varieties while expanding the harvest season. Also, the model determined how well, from a profit perspective, a new fruit strain or rootstock would incorporate or replace varieties already being grown.

"Metropolitan Agriculture in the Northeast: New Settlement Patterns and Agricultural Adaptation." Ralph E. Heimlich (Project Leader, Land Supply Analysis Project, Resources and Technology Division, Economic Research Service, USDA, Washington, D.C.

Evidence presented in this paper suggests that an alternative agriculture consisting of smaller farms growing high-value crops demanded by local urban markets is emerging in Northeast metropolitan areas. Changes in the pattern of new urban development suggest that a closer integration of urban and rural land uses is both desired by people moving to the metropolitan fringes and increasingly possible. Northeastern metro farmers derive more of their sales from high-value enterprises and operate more intensively than nonmetro farmers. More Northeastern farmers operate full time than their counterparts in other regions. Farmland protection strategies that segregate development and agricultural use components of farmland value may put metro farmers at greater financial risk and reduce their access to financing. If these trends are confirmed, they imply changes in agricultural research, extension, and government policies and programs to accommodate a more innovative, less traditional agriculture than in the past.

Abstract of Symposium

Regional Project NE-150 Symposium
Purchase of Development Rights Programs in the Northeast

Organizer and Moderator: John Mackenzie (University of Delaware)
Speakers: Donn Derr (Rutgers University), Billy Lessley (University of Maryland), William King (consultant to Massachusetts Dept. of Agriculture), Doug Morris (University of New Hampshire)

Continuing development pressures on farmland have brought the Northeast through three stages of farmland preservation policy: first agricultural zoning, then use-value assessment of farmland, and now purchase of development rights (PDR). PDR programs have been established in Maryland, New Jersey, New Hampshire, Connecticut, Massachusetts and Rhode Island. While expensive and often administratively cumbersome, they permit more accurate targeting and more certain preservation of farmland than is feasible with ag zoning or use-value assessment. John Mackenzie reviewed the combination of demographic and market pressures in the region leading to the development of PDR programs. Donn Derr provided a historical overview of the Northeast's PDR programs and discussed the evolving goals of the programs. Billy Lessley discussed the integration of Maryland's PDR program with ag districting and use-value assessment programs, and summarized program accomplishments in Maryland. Bill King discussed the political and planning issues involved in administering PDR programs, with specific reference to the Massachusetts program. Doug Morris addressed the issue of PDR program efficiency and reviewed inconsistencies in New Hampshire's program between stated objectives and accomplishments.